


Lockheed Martin Information Systems and Global Services
Environmental Services/SERAS
2890 Woodbridge Ave, Building 209 Annex
Edison, NJ 08837-3679
Telephone: 732-321-4200 Facsimile: 732-494-4021



DATE: December 14, 2012
TO: R. Singhvi, EPA/ERT Analytical Work Assignment Manager
FROM: V. Kansal, SERAS Analytical Support Leader 
SUBJECT: DOCUMENT TRANSMITTAL UNDER WORK ASSIGNMENT # SERAS-001

Attached please find the following document prepared under this work assignment:

Paulsboro Train Derailment - Analytical Report

S. Burchette	Work Assignment Manager (w/o attachment)
D. Miller	SERAS Task Leader (w/o attachment)
Central Files	WA# SERAS 40001 (w/attachment)





PEER REVIEW

DOCUMENT CONTROL SHEET

Paulsboro Train Derailment in Paulsboro, New Jersey
Document Name: Analytical Report

EPA Work Assignment No.SERAS 40-001
LOCKHEED MARTIN Work Order SERAS 40001

SIGNATURES

Deliverable Due Date:

Technical Report Abstract (Project Summary) required: Yes ____ No x

<u>Discipline</u>	<u>Reviewed</u>	<u>Date</u>	<u>Approved</u>	<u>Date</u>
Analytical Support Leader (V. Kansal)	_____	_____	<i>V. Kansal</i>	12/14/12
QA/QC Officer (D. Killeen)	_____	_____	<i>D. Killeen</i>	12/14/12
Program Manager (D. Miller)	_____	_____	<i>D. Miller</i>	12/14/12

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of ERT/SERAS Laboratory





Table of Contents

Topic

Testing Laboratories Information
Detailed Sample Information
Introduction
Case Narrative
Summary of Abbreviations

Section I

Results of the Analysis for VOC (ppbv) in Air	Table 1.1a
Results of the Analysis for VOC ($\mu\text{g}/\text{m}^3$) in Air	Table 1.1b

Section II

Results of the LCS Analysis for VOC in Air	Table 2.1
Results of the Duplicate Analysis for VOC in Air	Table 2.2

Section III

Chain of Custody

Appendices

Appendix A Data for VOC in Air	X228
--------------------------------	------

Appendix will be furnished on request.





TESTING LABORATORIES INFORMATION

Analysis of Volatile Organic Compounds in Air, SERAS SOP# 1814, "*Analysis of Volatile Organic Analysis (VOCs) in Air by Gas Chromatography/Mass Spectrometry (GC/MS)*"

ERT/SERAS Laboratory
2890 Woodbridge Avenue
Edison, NJ 08837

All analyses were performed according to our NELAP-approved quality assurance program. The test results meet the requirements of the current NELAP standard, where applicable, except as noted in the laboratory case narrative provided. Results are intended to be considered in their entirety and apply only to those analyzed and reported herein.

ERT/SERAS Laboratory is certified by the New Jersey Department of Environmental Protection, NELAP Laboratory Certification ID # 12023 for VOC analysis in air.

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of ERT/SERAS Laboratory





Detailed Sample Information

SERAS Sample #

Field Sample #

R212013-01	40001-0035
R212013-02	40001-0036
R212013-03	40001-0037
R212013-04	40001-0038
R212013-05	40001-0039
R212013-06	40001-0040
R212013-07	40001-0041
R212013-08	40001-0042
R212013-09	40001-0043
R212013-10	40001-0044
R212013-11	40001-0045

REPORT OF LABORATORY ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of ERT/SERAS Laboratory





Introduction

SERAS personnel, in response to WA# SERAS-001, provided analytical support for environmental samples collected from the Paulsboro Train Derailment in Paulsboro, New Jersey as described in the following table. The support also included QA/QC, data review and preparation of an analytical report containing analytical and QA/QC results.

The samples analyzed at SERAS were treated with procedures consistent with those specified in SERAS SOP #1008, *Sample Receiving, Handling and Storage* and SOP #1009, *Operation of Sample Refrigeration Units*.

Chain of Custody #	Number of Samples	Sampling Date	Date Received	Date Analyzed	Matrix	Analysis/ Method	Laboratory	Data Package
02-121212-180155-0004	11	12/13/12	12/13/12	12/13-14/12	Air	VOC/SERAS SOP #1814	ERT/SERAS	X233

Case Narrative

Sampling was conducted as per the site-specific Quality Assurance Project Plan (QAPP) and analyzed by the analytical methods stated in the QAPP. The laboratory reported the data to three significant figures. Any other representation of the data is the responsibility of the user. Data were validated in accordance with the "Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use" using a Stage 4 Validation done manually (S4VM). All data validation flags have been inserted into the results tables. At the request of the Work Assignment Manager, the laboratory reported results for vinyl chloride.

VOCs in Soil Package X233

The data package was examined and found to be acceptable.

The results presented in this report only relate to the samples analyzed. All results are intended to be considered in their entirety. The Environmental Response Team/Scientific, Engineering, Response and Analytical Services laboratory is not responsible for utilization of less than the complete report.





Summary of Abbreviations

BFB	Bromofluorobenzene
C	Centigrade
CLP	Contract Laboratory Program
COC	Chain of Custody
conc	concentration
cont	continued
CRDL	Contract Required Detection Limit
CRQL	Contract Required Quantitation Limit
D	(Surrogate Table) value is from a diluted sample and was not calculated
Dioxin	Polychlorinated dibenzo-p-dioxins (PCDD) and Polychlorinated dibenzofurans (PCDF)
DFTPP	Decafluorotriphenylphosphine
EMPC	Estimated maximum possible concentration
GC/MS	Gas Chromatography/ Mass Spectrometry
IS	Internal Standard
LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MDA	Minimum Detectable Activity
MS (BS)	Matrix Spike (Blank Spike)
MSD (BSD)	Matrix Spike Duplicate (Blank Spike Duplicate)
MW	Molecular Weight
NA	Not Applicable or Not Available
NAD	Normalized Absolute Difference
NC	Not Calculated
NR	Not Requested/Not Reported
NS	Not Spiked
% D	Percent Difference
% REC	Percent Recovery
SOP	Standard Operating Procedure
ppbv	parts per billion by volume
ppm	parts per million
pptv	parts per trillion by volume
PQL	Practical Quantitation Limit
PAL	Performance Acceptance Limit
QA/QC	Quality Assurance/Quality Control
QL	Quantitation Limit
RL	Reporting Limit
RPD	Relative Percent Difference
RSD	Relative Standard Deviation
SERAS	Scientific, Engineering, Response and Analytical Services
SIM	Selected Ion Monitoring
Sur	Surrogate
TIC	Tentatively Identified Compound
TCLP	Toxicity Characteristic Leaching Procedure
VOC	Volatile Organic Compound
*	Value exceeds the acceptable QC limits

m ³	cubic meter	g	gram	kg	kilogram	L	liter
µg	microgram	µL	microliter	mg	milligram	mL	milliliter
ng	nanogram	pg	picogram	pCi	picocurie	s	sigma

Data Validation Flags

J	Value is estimated	R	Value is unusable
J+	Value is estimated high (metals only)	U	Not detected
J-	Value is estimated low (metals only)	UJ	Not detected and RL is estimated
N	Presumptively present (Aroclors only)		

Rev. 1/14/09





Table 1.1a Result of the Analysis for VOC (ppbv) in Air
WA# SERAS-001, Paulsboro Train Derailment

Page 1 of 1

Method: SERAS SOP#1814

SERAS Sample Number	MethodBlank121312-01		P SystemBlank121312-01		R212013-11		R212013-01		R212013-02	
Sample Number	N/A		N/A		40001-0045		40001-0035		40001-0036	
Sample Location					Trip Blank		Washington		Church	
Sample Sublocation							None		114	
Analyte	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL
	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
Vinyl Chloride	U	0.0300	U	0.0300	U	0.0300	0.408	0.0300	0.197	0.105

Table 1.1a (cont) Result of the Analysis for VOC (ppbv) in Air
WA# SERAS-001, Paulsboro Train Derailment

Method: SERAS SOP#1814

SERAS Sample Number	R212013-03		R212013-04		R212013-05		R212013-06		R212013-07	
Sample Number	40001-0037		40001-0038		40001-0039		40001-0040		40001-0041	
Sample Location	On-site House		On-site House (Dup)		Mantua		High School		Police Station	
Sample Sublocation	None		None		79		104		83	
Analyte	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL
	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
Vinyl Chloride	0.304	0.0300	0.302	0.0300	U	0.0300	U	0.0300	U	0.0300

Table 1.1a (cont) Result of the Analysis for VOC (ppbv) in Air
WA# SERAS-001, Paulsboro Train Derailment

Method: SERAS SOP#1814

SERAS Sample Number	R212013-08		R212013-09		R212013-10	
Sample Number	40001-0042		40001-0043		40001-0044	
Sample Location	Mobile		Library		Jessup	
Sample Sublocation	24		98		103	
Analyte	Results	RL	Results	RL	Results	RL
	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
Vinyl Chloride	U	0.0300	0.0475	0.0300	0.0433	0.0300

Table 1.1b Result of the Analysis for VOC (µg/m3) in Air
WA# SERAS-001, Paulsboro Train Derailment

Page 1 of 1

Method: SERAS SOP#1814

SERAS Sample Number	R212013-01		R212013-02		R212013-03	
Sample Number	40001-0037		40001-0038		40001-0039	
Sample Location	On-site House		On-site House (Dup)		Mantua	
Sample Sublocation	None		None		79	
	Results	RL	Results	RL	Results	RL
Analyte	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3
Vinyl Chloride	U	0.0767	U	0.0767	U	0.0767

Table 1.1b (cont) Result of the Analysis for VOC (µg/m3) in Air

Method: SERAS SOP#1814

SERAS Sample Number	R212013-04		R212013-05		R212013-06	
Sample Number	40001-0040		40001-0041		40001-0042	
Sample Location	On-site House		On-site House (Dup)		Mantua	
Sample Sublocation	None		None		79	
	Results	RL	Results	RL	Results	RL
Analyte	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3
Vinyl Chloride	0.776	0.0767	0.772	0.0767	U	0.0767

Table 1.1b (cont) Result of the Analysis for VOC (µg/m3) in Air
WA# SERAS-001, Paulsboro Train Derailment

Method: SERAS SOP#1814

SERAS Sample Number	R212013-08		R212013-09		R212013-10	
Sample Number	40001-0043		40001-0044		40001-0045	
Sample Location	Mobile		Library		Jessup	
Sample Sublocation	24		98		103	
	Results	RL	Results	RL	Results	RL
Analyte	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3	µg/m3
Vinyl Chloride	U	0.0767	0.121	0.0767	0.111	0.0767



Table 2.1 Results of the LCS Analysis for VOC in Air
WA# SERAS-001, Paulsboro Train Derailment

Page 1 of 1

Sample ID: LCS 12/13/12

Analyte	LCS Spike Amount ppbv	LCS Recovered ppbv	% Recovery	QC Limits % Recovery
Vinyl Chloride	1.00	1.03	103	70 - 130

REPORT OF ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of ERT/SERAS Laboratory





Table 2.2 Results of the Duplicate Analysis for VOC in Air
WA# SERAS-001, Paulsboro Train Derailment

Page 1 of 1

Sample ID: 40001-0036

Analyte	Initial Analysis ppbv	Duplicate Analysis ppbv	RPD	QC Limit RPD
Vinyl Chloride	0.197	0.200	2	≤25

Table 2.2 (cont) Results of the Duplicate Analysis for VOC in Air
WA# SERAS-001, Paulsboro Train Derailment

Sample ID: 40001-0044

Analyte	Initial Analysis ppbv	Duplicate Analysis ppbv	RPD	QC Limit RPD
Vinyl Chloride	0.0433	0.0402	7	≤25

REPORT OF ANALYSIS

This report shall not be reproduced, except in full,
without the written consent of ERT/SERAS Laboratory



USEPA

DateShipped: 12/13/2012

CarrierName:

AirbillNo:

WO# R212013

CHAIN OF CUSTODY RECORD

Site #: 40001

Contact Name: Amy DuBois

Contact Phone: 609-865-9304

No: 2-121212-180155-0004

Cooler #:

Lab: ERT/SERAS

Lab Phone: 732-321-4200

Lab #	Site #	Sample #	Location	Sub Location	Matrix	Sample Type	Collected	Pump #	OrificeID	Final Volume vacuum	Net PS 12/13/12 Units	Stop Date
01	40001	40001-0035	Washington	NONE	Air	Field Sample	12/13/2012	138	13760	-2.5	Liters	12/13/2012
02	40001	40001-0036	Church	114	Air	Field Sample	12/13/2012	34	13917	-1.5	Liters	12/13/2012
03	40001	40001-0037	On site house	NONE	Air	Field Sample	12/13/2012	219	14024	-2.5	Liters	12/13/2012
04	40001	40001-0038	On site house (Dup)	NONE	Air	Field Sample	12/13/2012	245	13960	0	Liters	12/13/2012
05	40001	40001-0039	Mantua	79	Air	Field Sample	12/13/2012	95	13795	-2	Liters	12/13/2012
06	40001	40001-0040	High School	104	Air	Field Sample	12/13/2012	10	13924	0	Liters	12/13/2012
07	40001	40001-0041	Police Station	83	Air	Field Sample	12/13/2012	166	14045	-4	Liters	12/13/2012
08	40001	40001-0042	Mobile	24	Air	Field Sample	12/13/2012	59	13734	-5	Liters	12/13/2012
09	40001	40001-0043	Library	98	Air	Field Sample	12/13/2012	137	13945	-1	Liters	12/13/2012
10	40001	40001-0044	Jessup	103	Air	Field Sample	12/13/2012	12	13997	-2	Liters	12/13/2012
11	40001	40001-0045	Trip Blank	NA	Air	Trip Blank	12/13/2012	14261	NA	-30	Liters	12/13/2012

Special Instructions: Vinyl Chloride via TO-15

SAMPLES TRANSFERRED FROM
CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date	Time
All/Analysis	[Signature]	12/13/12	[Signature]	12/13/12	11:20	Lab Analysis	[Signature]	12/13/12	[Signature]	12/13/12	13:00
All/Analysis	[Signature]	12/13/12	[Signature]	12/13/12	13:25						